WASHINGTON STATE
AUTONOMOUS VEHICLE
WORK GROUP

# Executive Committee Meeting #2

October 24, 2018

Washington State Transportation Commission

# Agenda

- 12:00 Introductions and Process Overview
- 12:15 AV Subcommittee Reports
- 1:30 National AV Legal Scan
- 2:20 Draft Two-Year Work Plan Review
- 3:50 EC Membership Proposed Changes
- 4:35 Public Comment
- 4:50 Next Steps/Closing Remarks
- 5:00 Adjourn

# Introductions and Process Overview

**Darrin Grondel**
Chair
Washington State AV Work Group

**Reema Griffith**
Executive Director
Washington State Transportation Commission

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# Subcommittee Structure

## AV Work Group Executive Committee

- Governor
- Insurance Commissioner
- DOL Director
- DOT Secretary
- WSP Chief
- Traffic Safety Commission Director
- State Chief Information Officer
- WSTC Chairman
- Four members from Senate
- Four members from House

## SUBCOMMITTEES

| LICENSING | SAFETY | INFRASTRUCTURE & SYSTEMS | SYSTEM TECH & DATA SECURITY | LIABILITY |
|---|---|---|---|---|
| 2 Co-Chairs<br>DOL Support Lead | 2 Co-Chairs<br>WSTC & WSP Support Lead | 2 Co-Chairs<br>DOT Support Lead | 2 Co-Chairs<br>State CIO Support Lead | 2 Co-Chairs<br>Insurance Comm. Support Lead |
| Manufacturer vehicle testing, vehicle regulation, driver's licensure, rules of the road | Traffic safety and law enforcement | Roadway infrastructure, traffic management, transit vehicles | Data and information management, cybersecurity | Insurance and tort liability, criminal law |

*DSHS, L&I and Commerce: Play a supporting role regarding cross-cutting issues including implications on social services, access, environmental justice, labor and small business*

# *Safety Subcommittee*

## Dan Hall

Captain - District 1
Washington State Patrol

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# *Licensing Subcommittee*

## Beau Perschbacher

Legislative and Policy Director
Washington Department of Licensing

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# *Infrastructure and Systems Subcommittee*

## Ted Bailey

Cooperative Automated Transportation Program Manager
Washington State DOT

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# *Liability Subcommittee*

## Lonnie Johns-Brown

Legislative Director
Office of the Insurance Commissioner

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# *System Technology and Data Security Subcommittee*


## Alex Alben

Chief Privacy Officer
State of Washington


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# National AV Legal Scan and Assessment of Washington State Regulatory Needs


## Alex Palumbo

Student Research Analyst
Technology Law and Public Policy Clinic
University of Washington School of Law


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# 2019/21 AV Work Group Executive Committee DRAFT Work Plan


Reema Griffith | WSTC
Scott Shogan | WSP USA
Sahar Shirazi | WSP USA


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# Refresher: AV Work Group Charge

- Follow developments in AV technology and related policies
- Explore approaches to modify state policy, rules and laws to further public safety and prepare for the emergence of AV technology
- Share information on AV technology and policies with interested stakeholders
- At the direction of the legislature, engage the public through survey, focus groups, and other means, to better inform policy makers
- Provide recommendations to the WSTC
- The WSTC must develop and provide recommendations based upon the input from the work group, and submit them along with a progress report to the Governor and Legislature each year.

# 2019/2021 Two-Year Plan Overview

- Goal and Vision Setting
- AV Deployment Assessment
- Communications and Outreach
- Work Group Facilitation

# Cost Assumptions

*Note: budget assumptions included in the draft plan are for WSTC contracting only, and do not yet include additional agency costs to support the work group.*

*Agency costs will be included based on responses to the budget template request*

# Goal and Vision Setting - Purpose

- Establish a vision for the future of mobility in Washington
- Establish a vision for Washington's role in pursuing AV and emerging mobility solutions beyond the State's borders
- Set goals for the Work Group's activities over the five-year duration
- Guide discussions, direction, and action items for the Work Group

# Goal and Vision Setting – ACTION PLAN

- Facilitated workshop(s) with Work Group to identify vision and goals
- *Possible* focus group (at the direction of the legislature) engagement to validate vision and goals
- Refinement and final Work Group validation
- Resourcing
  - » Estimated $50-$100K

# AV Deployment Assessment - Purpose

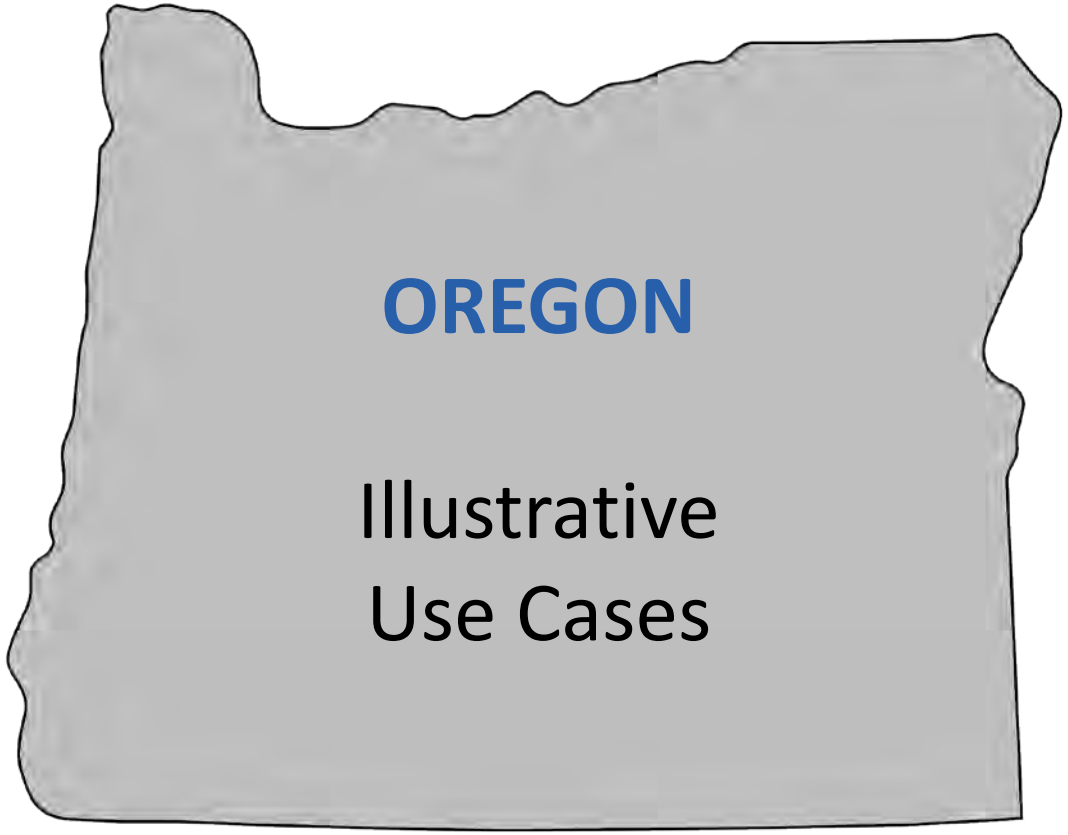
- Create common, facilitated process for subcommittees to consider policy responses
- Consider and assess a range of uses of AV technologies with alternative futures and outcomes
- Identify critical implications of various AV uses and future scenarios
- Inform policy and regulatory development to achieve established vision and goals
- Identify investment needs to support policy objectives

# California Regulatory Approach Summary

- Long process of stakeholder engagement over the course of six years
  - » State government
  - » Automotive and technology industries
  - » Legal/liability and insurance
  - » Cities
- Approach targeted regulations specific to testing operation and deployment in the state
- Multiple iterations of regulatory language

**NOT RECOMMENDED FOR WASHINGTON STATE AT THIS TIME DUE TO NARROW PURPOSE/OUTCOMES**

# Two Alternative Approaches to Consider:




# Illustrative Use Cases


- Conducted by the Oregon Department of Transportation (ODOT)
- Eight-month development process
- Desired Outcomes:
  - » Develop use cases to support understanding by policy-makers of the range of uses of AV technologies and the policy implications of each
- Benefits of Approach:
  - » Provides focus on specific technology uses and approaches, simplifying policy responses

# Wide Range of Use Cases Identified and Researched

- Use Case 1: Vehicles with Conditional Automation
- Use Case 2: Vehicles with Full Automation
- Use Case 3: On-Demand Fleets of Automated Vehicles
- Use Case 4: Automated Regional Public Transit
- Use Case 5: Automated Interregional Transit
- Use Case 6: Automated Local Delivery Vehicles
- Use Case 7: Automated Medium- and Long-Haul Freight Trucks
- Use Case 8: Automated Heavy Equipment Vehicles

# Use Case Overview

- Define an application of technology (“use case”)
- Describe the potential timeline for deployment
- Identify how the use case could change the transportation system
- Identify the policy implications of the use case

SAE LEVEL 4-5

USE CASE 2:
**VEHICLES WITH FULL AUTOMATION**

**What is full automation?**

Vehicles with full automation will be able to operate without human control from the beginning to the end of a trip, with equivalent or better performance than a human driver. These vehicles may not even have steering wheels or pedals. Passengers will not need to be ready to take over at a moment’s notice; instead, they will be able to spend their travel time as they wish—working, reading, watching TV, or relaxing. These vehicles could improve the safety of the transportation system and increase mobility for those who do not or cannot drive. However, they could also create new challenges as they increase demand for travel, require new infrastructure investments, or increase congestion by frequently driving unoccupied or longer distances than human drivers may tolerate.

**When will full automation be ready for deployment?**

Vehicle manufacturers and technology companies are aggressively investing in research and development, all vying to produce the first fully self-driving vehicle. Several companies assert that the first such vehicles could hit the road in the next three to five years, and GM recently announced it intends to deploy fully automated vehicles in 2019. The earliest versions of fully automated vehicles may only be designed to operate in certain areas; for example, they may be able to drive themselves in a metropolitan area for which they have detailed maps and navigation information, but either cannot drive or require a human driver to take control outside that area. Later models will be able to operate anywhere and under all conditions.

# EXAMPLE Use Case: Automated Medium- and Long-Haul Freight Trucks


- **What** is an automated freight truck?
  - Driver assistance systems to improve safety and reduce workload
  - Automation taking over driving responsibilities for all or part of each trip
  - In the more distant future: driver able to rest while truck is in automated mode
  - Improve safety and efficiency by reducing driver fatigue and human error

# EXAMPLE Use Case: Automated Medium- and Long-Haul Freight Trucks


- **When** will automated freight trucks be deployed?
  - » Testing today of vehicles with driver assist technologies, such as automated braking, lane keeping assist, etc.
  - » Development underway of vehicles that can operate autonomously, at least in highway context
  - » Widespread deployment of fully automated trucks will likely take longer than that of personal vehicles
    - At least 10 years until initial deployments

# EXAMPLE Use Case: Automated Medium- and Long-Haul Freight Trucks


- How could automated freight trucks **change** our transportation system?
  - » Impact traffic patterns and road use by:
    - Improving safety
    - Posing challenges due to platoons blocking entering and exiting traffic
  - » Impact trucking industry by:
    - Increasing productivity of drivers
    - Increasing retention of drivers due to reduced workload/stress
    - Reduce the cost of shipping
  - » Impacting the long-term economy by:
    - Eliminating some jobs, creating new jobs, and/or changing jobs in the trucking industry
    - Reducing cost of shipped goods

# EXAMPLE Use Case: Automated Medium- and Long-Haul Freight Trucks


- What are the **policy** implications of automated freight trucks?
  - » Infrastructure investment:
    - Possible need for roadway improvements/changes?
    - Who should bear responsibility for the costs?
    - Need to consider bridge and pavement weight restrictions?
  - » Insurance/Liability:
    - Who would be at fault for incidents of trucks in automated mode?
    - Manufacturer or trucking company insures?
  - » Workforce:
    - How to provide opportunities for displaced workers?
    - How to ensure adequate training for new kinds of jobs created?

# Scenario Planning


DEPARTMENT OF TRANSPORTATION

Connected and Automated Vehicle Strategic Plan

MnDOT is working with stakeholders around the state to plan for connected and automated vehicles in Minnesota. This includes a **scenario planning process** to imagine a range of possible futures and consider how we can best minimize the risks and maximize the benefits for all Minnesotans, regardless of how the future unfolds. For more information, see www.dot.state.mn.us/automated.

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SCENARIO:

GRADUAL CHANGE

SUMMARY

Minimal change beyond currently available technology and investments already in motion.

KEY ASSUMPTIONS

- Continued progress and innovation in CAV
- No major changes in technology since 2018

INDICATORS

| Connectivity | Automation | Cooperation | Electrification |
|---|---|---|---|
| LOW | LOW | LOW | LOW |

A DAY IN THE LIFE

*Parker is traveling in the early morning from the farm 20 miles outside Fergus Falls to pick up her baby granddaughter who lives in town with her mother. While Parker can't afford one of the new Level 4 vehicles, she is happy to have all the latest driver safety features on the pickup she bought three years ago. The automatic braking and lane keeping make her feel safer too as she navigates around another long truck platoon on the highway.*

- Conducted by the Minnesota Department of Transportation (MnDOT) - ongoing
- Part of a 12-month strategic planning process
- Desired Outcomes:
  - » Gain feedback on desired outcomes and policy priorities to inform the DOT's Connected and Automated Vehicle (CAV) strategic plan
- Benefits of Approach:
  - » Supports consideration of complex factors and relationships to focus on broad outcomes rather than narrow policies

# Four Scenarios Developed and Considered

- Scenario 1: Gradual Change
- Scenario 2: Connected Infrastructure
- Scenario 3: Competing Fleets
- Scenario 4: Integrated Mobility

# Scenario Overview

- Outline a potential future ("scenario"), which illustrates the overall societal effects of technology
- Identify key assumptions and indicators
- Describe a "day in the life" of a transportation user in this future
- Identify what is different from today, and the modes and locations impacted

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SCENARIO:

## INTEGRATED MOBILITY

**SUMMARY**

On-demand shared services proliferate and integrate with other modes via cooperative data sharing, policies, infrastructure.

**KEY ASSUMPTIONS**

- Level 4 AV technology available at commercially affordable prices
- Integrated, coordinated mobility-as-a-service is common, shows large benefits
- Car ownership rates drop, especially in cities

**INDICATORS**

| Connectivity | Automation | Cooperation | Electrification |
|---|---|---|---|
| HIGH | VERY HIGH | HIGH | HIGH |

**A DAY IN THE LIFE**

*Chin is working from home in Hinckley when he gets a message that his favorite author is giving a talk in Duluth, 75 miles away. He has a report due that afternoon, but knows that with he will be able to work while he's traveling. He opens his city's mobility app, to summon a shared AV for the trip. However, looking at his options, he sees that there is an incident on Highway 35, but the train fare has been substantially reduced to encourage travelers not to get on the roads. He books his trip and takes an automated rideshare service to the train station. After an hour and a half of comfortable, high-speed travel, he submits his report, walks out of the station, and steps into the shared electric AV that pulls up right as he exits. Chin jumps into a waiting vehicle for an easy and comfortable ride back to Hinckley. He is the only passenger, but the vehicle is full of boxes on their way to be delivered at stops along the way.*

# How are the scenarios being used to develop strategy and policy?

- 10+ workshops being held around the state with a wide range of stakeholders
- Participants broken into small groups – each group considering one scenario
- The scenario is presented by a facilitator
- Each group responds to the scenario with the following:
  - » Potential opportunities and challenges
  - » Suggested policy responses
  - » Anticipated timeline of policy response

# Scenario 3: Competing Fleets

- Summary and Key Assumptions
  - » Avs proliferate – but because of low cooperation, benefits accrue more to drivers and vehicles than other modes
  - » Congestion is common in urban areas
  - » Level 4 AV technology is available at commercially affordable prices
  - » Outdated pricing, policy and lack of cooperation results in most trips being single occupant vehicle

**INDICATORS**

| Connectivity | Automation | Cooperation | Electrification |
|---|---|---|---|
| LOW | HIGH | MED | MED |

# Scenario 3: Competing Fleets

- A Day in the Life
  - *Marketa leaves her St. Paul office and quickly orders a ride on her phone. Within seconds, an electric car pulls up for her into a nearby pickup lane, where many cars are taking in passengers, and after wading through the clump of waiting vehicles, she jumps in for her ride out to Lake Elmo. She takes out her book and begins to read – it could be a long ride, as congestion has made what was once a 30-minute commute into almost an hour.*

# Scenario 3: Competing Fleets

- What is different from today?
  - » Technology
    - 70% of vehicles have some automation
    - Level 4 AVs are adopted by fleets and make up 30% of the market
  - » Attitudes and Preferences
    - Price of Level 4 AV is comparable to high-end luxury vehicle
    - In cities, TNCs are more cost effective than owning a car
    - People trust AV/CV system
  - » Social and Economic Factors
    - Fleets are fully automated; freight costs plummet
    - Public transit vehicles fully connected and autonomous
    - Up to 85% of miles are traveled in Avs owned by private operators, typically as non-shared rides
  - » Rules and Regulations
    - Limited data sharing and lack of regulation yields uneven benefits
    - Increased congestion due to high demand and lack of integration and cooperation

# Scenario 3: Competing Fleets

- Transportation Modes Impacted
  - » Benefits all vehicle modes (cars, freight, transit)
  - » System favors more profitable modes and trips
- Locations Impacted
  - » Location not limited by technology
  - » Lack of regulation favors more affluent, higher density areas

# Scenario Video

- 1
  https://vimeo.com/295441417/0f25eac130

  2
  https://vimeo.com/291167626/c4b1bae550

  3
  https://vimeo.com/295387620/2e183088db

  4
  https://vimeo.com/291168278/bfe30c7cfd

# Cost Comparison of Approaches

- Estimated cost of AV Deployment Assessment: $100K-$500K
- Oregon approach: lower end of range
  - » Largely agency staff resources
  - » Limited direct outreach
- Minnesota approach: higher end of range
  - » Significantly supported by private sector consultants with AV expertise
  - » More extensive material development
  - » Extensive outreach and documentation scope

# Discussion: Comparison of Approaches

- What questions do you have about the two approaches?
- What aspects resonate with you?
- Which do you think would most likely lead to the desired outcome?
- How would you modify the approach/process?

A detailed work plan/action plan will be developed based on the preferred approach for inclusion in the two-year plan

# Communications and Outreach - Purpose

- Educate the public and key stakeholder groups regarding AV information (*as directed by the legislature*)
- Convey information about the Work Group's efforts and AV-related initiatives happening within the state
- Communicate opportunities for stakeholders to engage in dialogue around AV and related technologies
- Gain feedback and input on stakeholder opinion and support/concerns regarding AV and related technologies

# Communications and Outreach – ACTION PLAN

- Develop formal Work Group communications plan which considers the following:
  - » Website, print materials, outreach events/venues, focus groups, public/stakeholder group polling, opportunities for partnership with established groups
- Set goals/expectations for communications during next biennium
- Carry out initial communications strategy
- Resourcing
  - » Estimated $75K-$150K

# Work Group Support and Facilitation

- Purpose: continued support of Work Group operation and execution
- Action Plan:
  - Work Group meeting planning and facilitation
  - Periodic update of five-year roadmap
  - Subcommittee reporting support
  - Work Group website maintenance
  - Annual reporting support
  - Development of 2021-2023 two-year work plan
- Resourcing
  - Estimated $300K-$400K (will be funded largely by existing commission budget)

# Fulfilling the Work Group Charge

| Work Group Charge | Goal and Vision Setting | AV Deployment Assessment | Communications and Outreach | Work Group Facilitation |
|---|---|---|---|---|
| Follow AV Developments | | X | | X |
| Explore approaches for policy, rule and law changes | X | X | | |
| Share information with stakeholders | | | X | X |
| Engage the public (at the direction of the legislature) | | | X | |
| Provide recommendations to WSTC | X | X | | |
| WSTC provides recommendations to Governor and Legislature | X | X | X | X |

# AV Work Group Five-Year Roadmap

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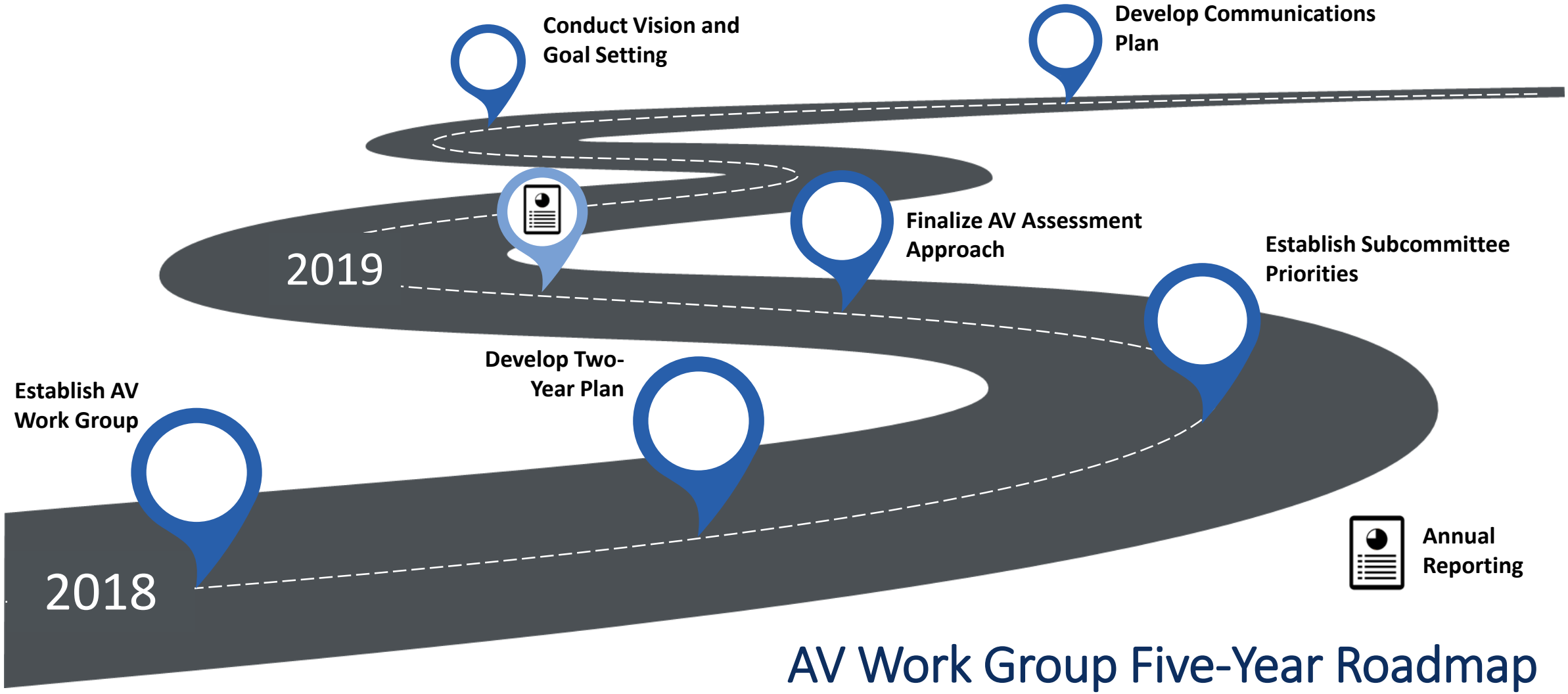
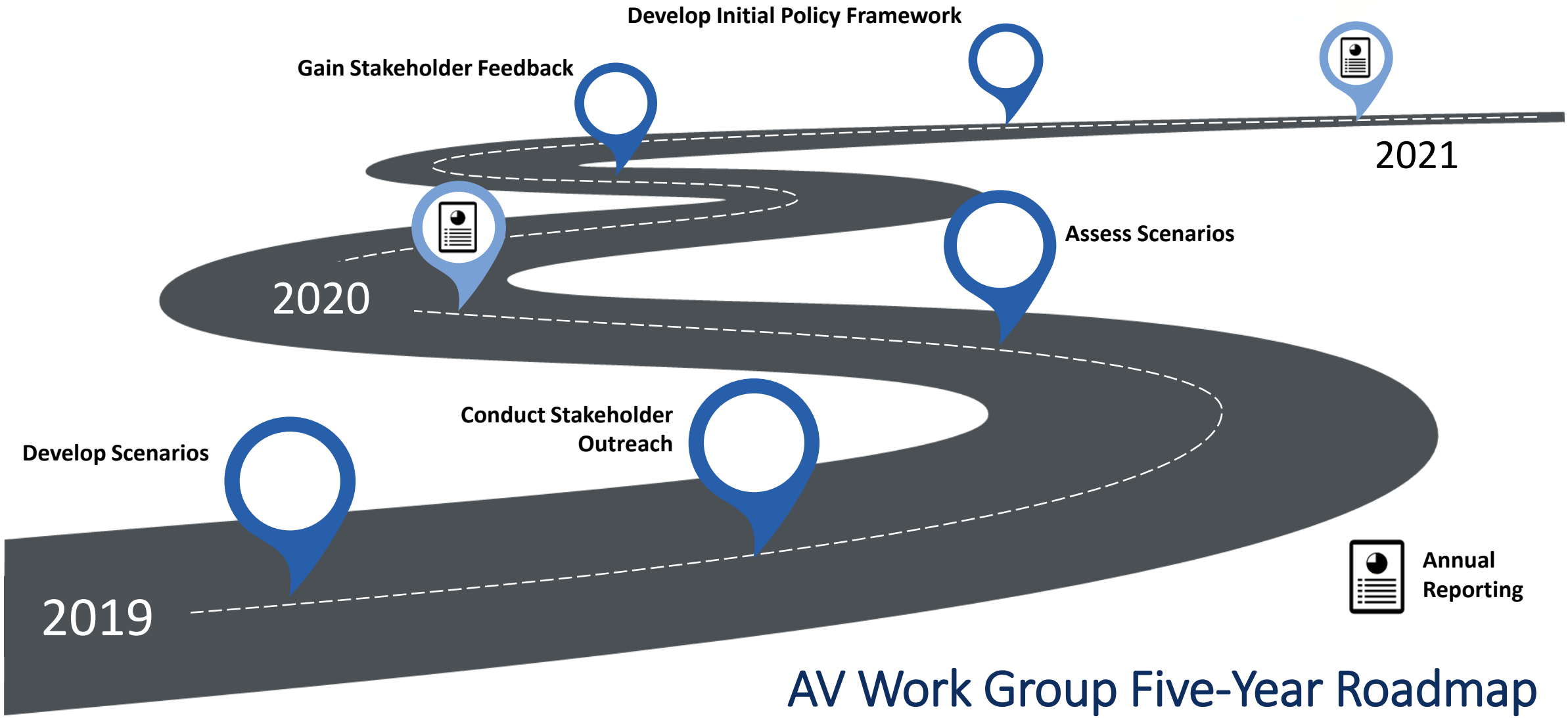


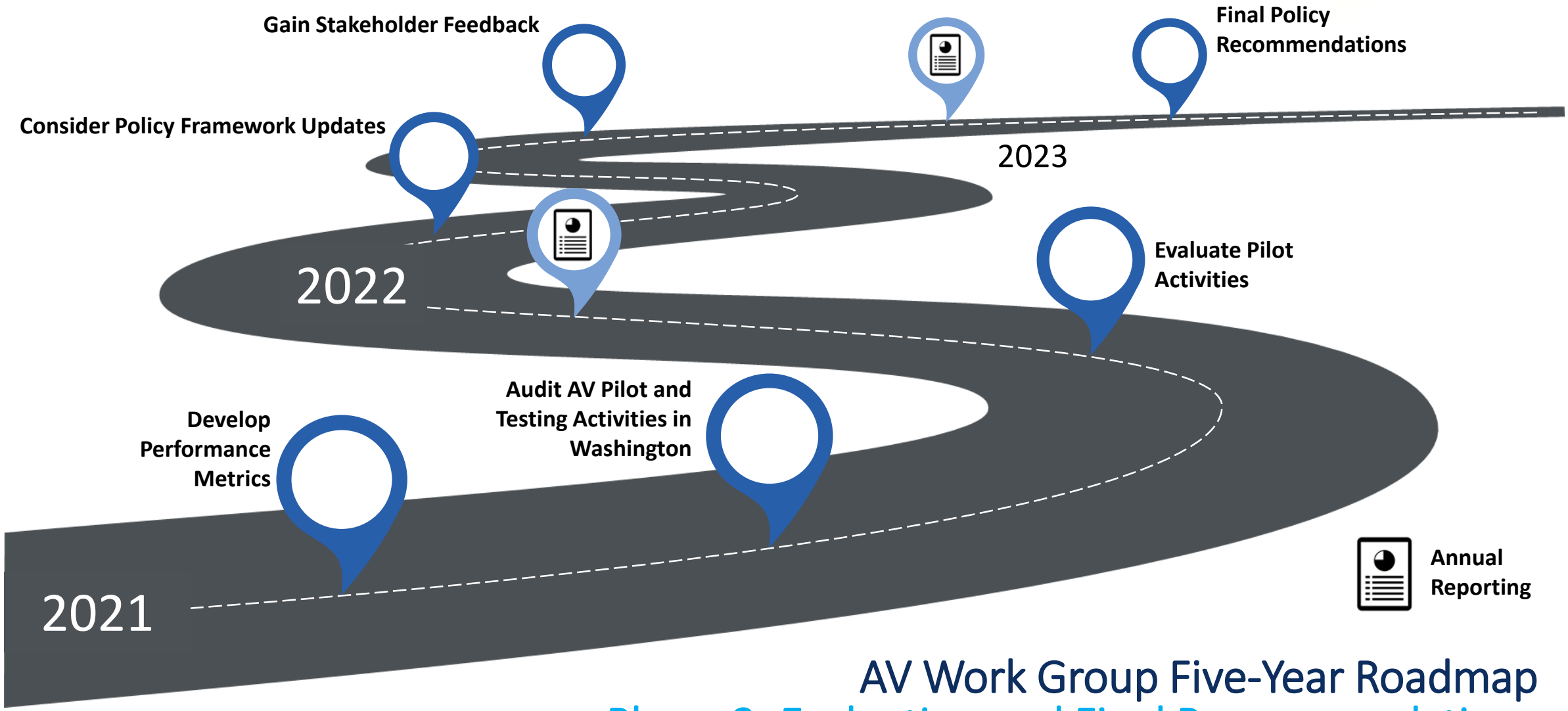

# AV Work Group Five-Year Roadmap

## Phase 1: Work Group Start-Up




# AV Work Group Five-Year Roadmap

## Phase 2: Initial Policy Framework




# AV Work Group Five-Year Roadmap

## Phase 3: Evaluation and Final Recommendations

# Automated Vehicles 3.0

## Preparing for the Future of Transportation

## Latest USDOT Guidance

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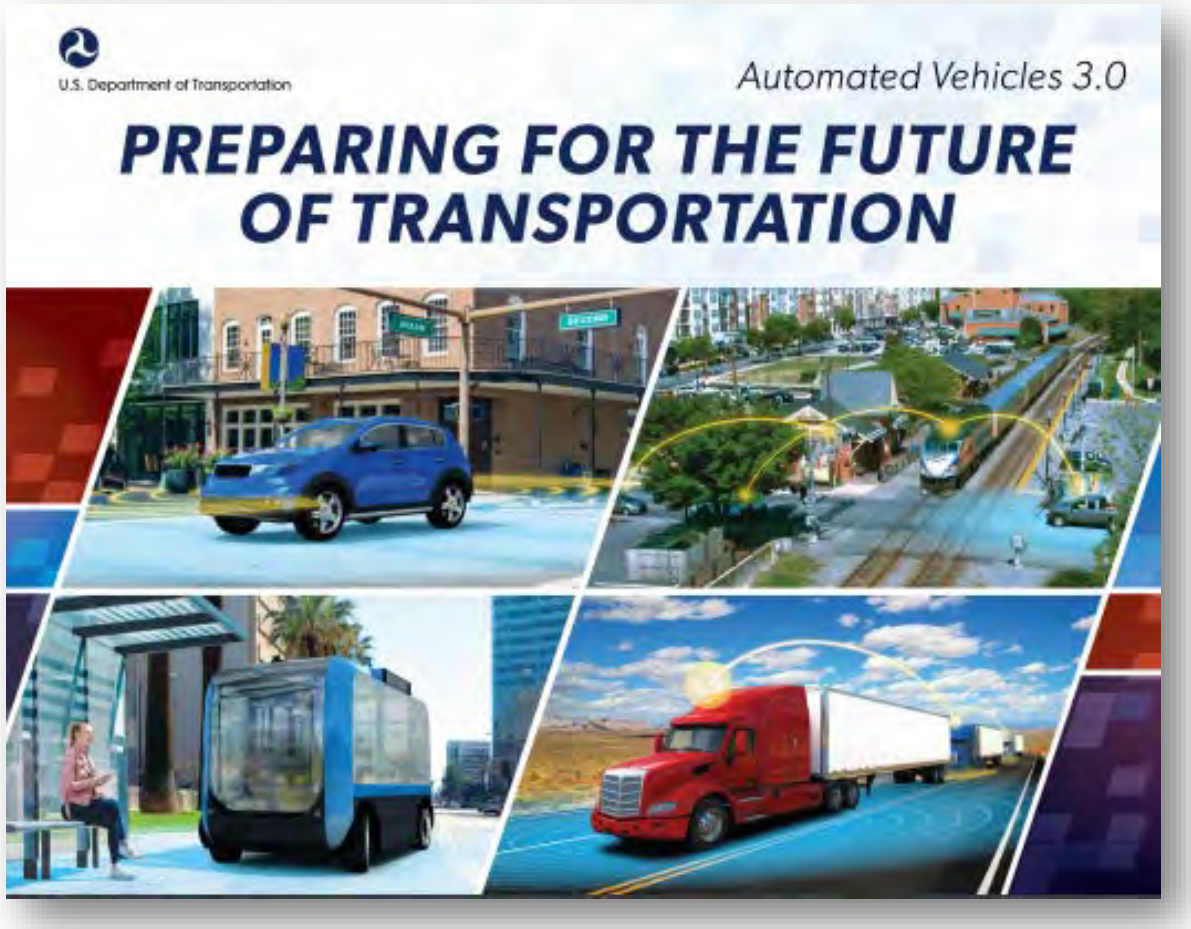
# AV 3.0 Overview

- Builds upon - does not replace - guidance in v2.0
- US DOT automation principles:
  - » Prioritize safety
  - » Remain technology neutral
  - » Modernize regulations
  - » Encourage a consistent regulatory and operational environment
  - » Prepare proactively for automation
  - » Protect and enhance the freedoms enjoyed by Americans



# Regulatory Actions Announced in AV 3.0

- NHTSA - changes to FMVSS and modernize FMVSS exemption petitions
- FMCSA - proposed rulemaking to define federal/state roles for ADS-equipped commercial motor vehicles and commercial carriers
- FHWA - update to the MUTCD
- FTA - work with transit agencies to provide tailored technical assistance
- DOT and Other Departments - research on areas where automation can improve the mobility of travelers with disabilities
- DOT and Other Departments - analysis of the employment and workforce impacts of automated vehicles

# New Sections in AV 3.0

- **Cooperative Automation and Connectivity** - encourages industry to continue developing technologies that leverage the 5.9 GHz spectrum for transportation safety benefits
- **AV Proving Grounds** - the Department no longer recognizes the designations of ten "Automated Vehicle Proving Grounds" as announced on January 19, 2017
- **Work Zone Data Exchange** - develop a harmonized specification for work zone data that infrastructure owners and operators can make available as open feeds that automated vehicles and others can use
- **Safety Risk Management Stages** - an illustrative framework of safety risk management stages along the path to full commercial integration of automated vehicles.

# Advice to State DOT's in AV 3.0

- Adopt terminology defined through voluntary technical standards
- Assess State roadway readiness
- Consider test driver training and licensing procedures for test vehicles
- Support safe testing & operations of AVs on public roadways
- Learn from testing and pilots to support highway system readiness
- Build organizational capacity to prepare for AVs in communities
- Identify data needs and opportunities to exchange data
- Support scenario development and transportation planning for automation

# AV 3.0 Summary

- Comment window closes 12/3/18
- General impressions
  - » Reaffirms US DOT's reliance on a self-certification approach
  - » Much more comprehensive than v2.0
  - » Incorporates industry input
  - » Provides a much broader set of guidance for the industry
  - » Encourages parties to use US DOT as a facilitator for dialogue among the various stakeholders and industries

# Executive Committee Membership Proposed Changes


## Zack Hudgins
Representative
Washington State Legislature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# PUBLIC COMMENT

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# Next Steps and Closing Remarks


## Darrin Grondel

Chair

Washington State AV Work Group


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# Next Steps and Closing

- Recap agreements from today's meeting
- Target month for next Executive Committee meeting
- Thank you for your participation today!